

MANITOBA DEPARTMENT OF AGRICULTURE

Summer-Fallow Competitions in Manitoba

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Summer-fallow on the farm of William Wilkie, Carman, Man.

Leading Points

- 1.—The Weeds, Soil and Climate are not alike in all parts of Manitoba; therefore, to obtain the best results, different methods of Summer-fallowing should be practised in different parts of the Province.
- 2.—For purposes of encouraging competitive effort in areas that are somewhat of a common type, the Province is divided into the Eastern, the South-western and the North-western Districts.
- 3.—Methods of Summer-fallowing for each of these respective areas are recommended herein.
- 4.—The Manitoba Agricultural Societies Act, as now revised, provides for the holding of Summer-fallow Competitions, and to every Agricultural Society holding such a competition the Department of Agriculture will give a grant equal to sixty per cent. of the amount actually paid out in cash for prizes.
- 5.—An outline for the holding of these competitions is presented herein.

FIGURES IN THIS CIRCULAR ADOPTED FROM THE "SCIENTIFIC FARMER"

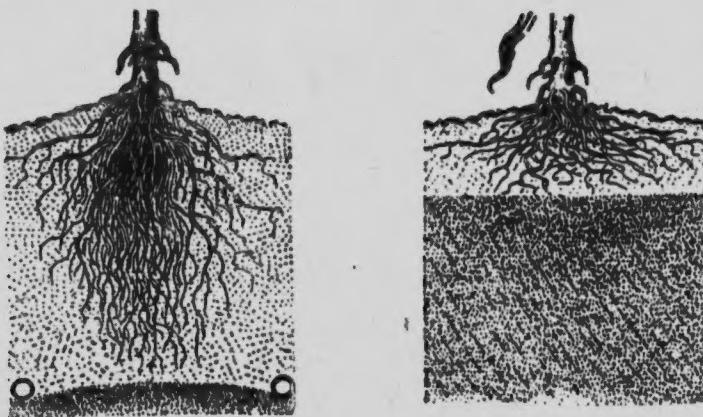


Fig. 1.—The effect of deep plowing on root development. If the land is loosened deeply, the roots readily work their way downward, and the plant is not so shallow rooted as after shallow plowing.

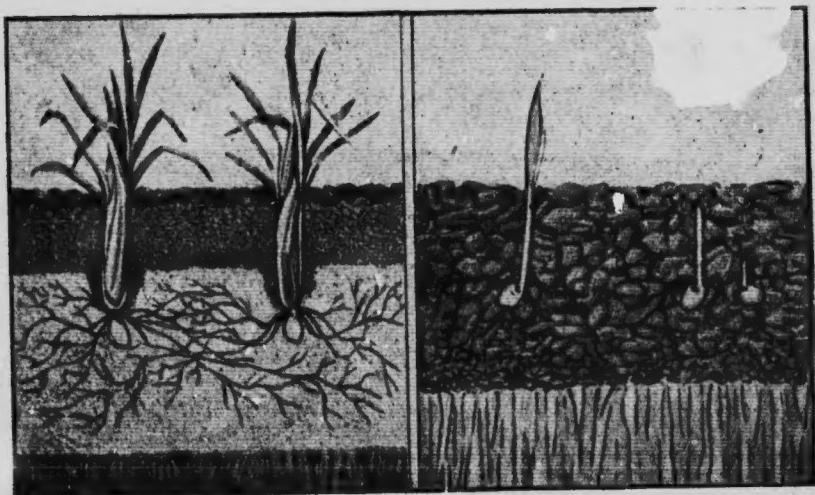


Fig. 2.—While the soil requires to be loosened by the plow (as pictured in Fig. 1), it is also true that it should not be left too loose and lumpy. The seed bed must be firm or the seed will not germinate. The root bed must be firm or the roots will not grow.

Summer-Fallow Competitions in Manitoba

SUMMER-FALLOWING

Summer fallowing is the cultivation throughout the summer of idle land which, the previous year, produced a crop of grain, corn or roots.

OBJECTS

1. To kill the weeds.
2. To store up moisture.
3. To make available plant food.
4. To utilize the slack time during the summer to prepare for next season's crop.

METHODS OF SUMMER-FALLOWING

The approved methods of preparing land for crop by summer-fallowing vary greatly, depending upon the kind of weeds and character of the soil and kind of climate. It has, therefore, been deemed advisable, for the purpose of planning summer-fallow methods, to divide the Province into three districts where the *weeds, soil and climate differ*.

Eastern District

The Eastern District shall include what is generally known as the Red River Valley, i.e., all land east of Darlingford, Deerwood, Leary, Rathwell, Bagot and Lake Manitoba.

SOIL AND CLIMATIC CONDITIONS.

The prevailing weeds in this district are perennials, of which the perennial Sow Thistle and Canada Thistle are most abundant. The soil is a stiff, clay loam. The fall frost is seldom early enough to do any damage and the rainfall is sufficient to produce profitable crops without summer-fallowing. Therefore, for the Eastern District the method of summer-fallowing must be outlined largely for the purpose of weed control. The method outlined must be a suitable one for stiff, clay soils.

METHOD RECOMMENDED FOR THE EASTERN DISTRICT

The work on all summer-fallow in this district must be both prompt and thorough if the eradication of the weeds is to be a success. It is, therefore, advisable to attempt to summer-fallow only such an acreage as can be done well. For this district the following method will prove most suitable:—

FALL CULTIVATION.—Skim plow the stubble the fall previous two or three inches deep. This covers the weed seeds, and if it is done early enough may start some of them to germinate in the fall. If these are annuals, they will be killed by the winter frosts.

EARLY SPRING CULTIVATION.—The land should be drag harrowed in the spring to conserve the moisture and germinate the Wild Oats and other weed seeds.

FLOWING.—The second plowing must be done sometime during the month of June. The earlier it can be done, the better the results will be. The depth of plowing should be about four to six inches. The plowing is done shallow to allow the duck feet of the cultivator to run on the bottom of the furrow. This is necessary because the cultivator feet will not clean in the loose, sticky soil.

HARROWING.—The soil should be harrowed with a drag harrow immediately after the plow and harrowed again crosswise about one week later. This compacts the soil and forms a mulch, and thus prevents evaporation. This operation will, therefore, conserve the moisture and start the weed seeds to germinate.

CULTIVATING.—From then until freeze-up the duck-foot cultivator should be used every week or ten days to prevent the weeds appearing above the ground. This will starve out the roots of the perennials. If this method is promptly and thoroughly followed, it will eradicate all kinds of thistles, and at the same time assure profitable yields of grain.

South-Western District

The South-western District shall include all land west of the Eastern District and south of the Main Line of the G.T.P.

SOIL AND CLIMATIC CONDITIONS.

The soil in this district is variable, it may generally be classed as sandy loams and clay loams. The rainfall is so light that a summer-fallow every third or fourth year is necessary to produce profitable crops. The fall frosts do not usually come early enough to damage the grain crops. The weeds that are causing the greatest loss in this district are Wild Oats and Russian Thistles. Some Perennial Sow Thistles and Canada Thistles are found, but usually only in small patches.

METHOD RECOMMENDED FOR SOUTH-WESTERN DISTRICT

Where the perennial weeds are found, the small patches should be treated by a method similar to that outlined for the Eastern District, excepting that the land could be plowed deeper and packed, which would allow the cultivator to work almost equally as well as on the shallow plowing. Where the weeds consist only of annuals, a less expensive method, as outlined below, may be practiced:

FALL CULTIVATION.—The land should be double disked or skim plowed about two to three inches deep. This will cover the weed seeds that are on the surface and cause them to germinate either in the fall or following spring. It also forms a mulch on the surface and reduces evaporation before the regular cultivation begins.

SPRING CULTIVATION.—The land should be harrowed in the spring to stir up the seeds that did not germinate in the fall and renew the mulch on the surface.

PLOWING.—The plowing should be done as early in June as possible. This will turn under the weeds before they have taken much moisture from the ground. It will also open up the soil so that it will absorb the moisture that falls in the June rains.

The depth of plowing will depend on the after cultivation. If a packer can be used, the plowing should be at least six inches deep. If a packer is not available, four to six inches will be deep enough. The reason for this is two-fold:

1. If the deep plowing is not packed, it dries out.
2. The cultivator will not work satisfactorily.

The deep plowing and packing gives the best results because it prepares a larger root bed, aerates a larger amount of soil, setting free more plant food, and conserves more moisture.

HARROWING.—The drag harrow should follow immediately after the plow, or, if this cannot be done, each day's plowing should be harrowed in the evening of the day it is plowed.

PACKING.—The packing should follow as soon as possible after the harrowing. The sub-surface packer gives best results, but either the surface or combination can be used to good advantage.

CULTIVATING.—The purpose of the after cultivation, so far as annual weeds are concerned, is to start them to grow and kill them when small. The land, therefore, should not be kept perfectly black, but the weeds allowed to appear above the ground. The destruction of these should take place from time to time by using the drag harrow or duck-foot cultivator.

If the weeds are true annuals, the winter frosts may be allowed to kill the last crop of weeds. This is cheaper than cultivating and at the same time leaves a small covering on the ground that will prevent drifting.

If the weeds are winter annuals, such as Stink Weed, the last cultivation should take place just before freeze-up. This is necessary to kill this class of weeds and prevent their growing in the crop the following season.

REDUCE LOSS FROM DRIFTING.—If the summer-fallowing is on soil that drifts, one of the following methods, where practicable, may be adopted:

1. Where weeds are not present, sow barley or oats in the latter part of July or first part of August.
2. Keep the surface of the soil corrugated by using the duck-foot cultivator.
3. Top dressing with manure.
4. Allow the last crop of annual weeds to be killed by the frost.

North-Western District

The North-Western District will include all land north of the G.T.P. and west of Lakes Manitoba and Winnipegosis.

SOIL AND CLIMATIC CONDITIONS.

The soil in this district is also variable, but probably on the whole heavier than the South-Western. It may, therefore, be called a clay loam. The climate is also variable, the rainfall in most places being limited and the crops subject to damage from early fall frosts.

WEEDS.

The Wild Oat is the principal weed, but in many parts of the district Quack Grass is giving considerable trouble. The method recommended generally will be for the control of annual weeds with

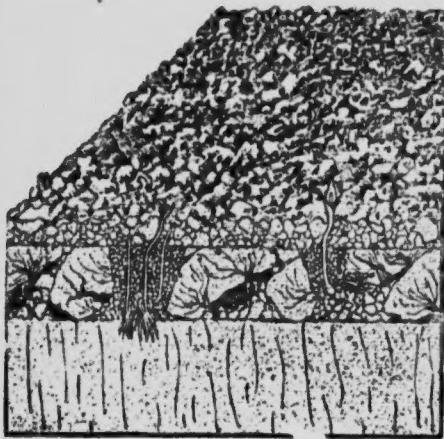


Fig. 3.—Plowed without first disking or skim plowing. The ground has turned over in lumps, and has not been retained in the fine mechanical condition in fig. 4.

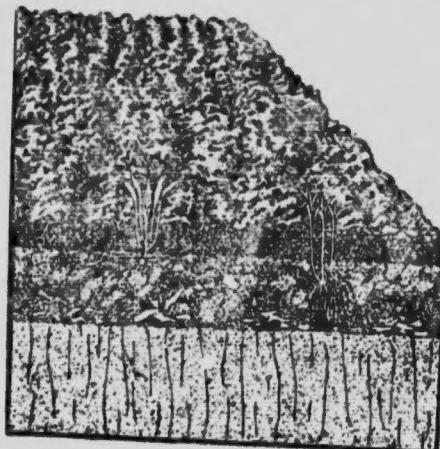


Fig. 4.—Plowed after disking or skim plowing. The first cultivation has kept moisture in the soil, and there is not a layer of rubbish turned under to be in one place, as otherwise might be the case.

consideration given to hastening maturity of the succeeding crop. If the Canada Thistle or Perennial Sow Thistle is prevalent, the method recommended for the Eastern District should be adopted.

METHOD RECOMMENDED FOR THE ANNUAL WEEDS.

The principle of annual weed eradication is the same here as in other districts, i.e., induce the seed to germinate and kill the plant when it is small.

FALL CULTIVATION.—The practice of double disking or skim plowing in the fall is necessary if Wild Oats are to be reduced in numbers by summer-fallowing.

EARLY SPRING CULTIVATION.—Harrowing this land in the spring will conserve the moisture and stir up the weed seeds so they will germinate more readily.



Fig. 5.—A plowed field before using the packer. When the furrow-slices have fallen together there are too many air spaces, and the soil will dry out quickly.

PLOWING.—The plowing should be done during the month of June to a depth of about six inches. Deeper plowing than this is not recommended as it is difficult even with a packer to get the soil thoroughly compact, and late maturity is the result.

HARROWING.—The harrow should follow after the plow to level the soil and reduce evaporation.

PACKING.—In this district packing is necessary to compact the soil, and thus hasten maturity.

CULTIVATION.—The cultivation should be given with a harrow or duck-foot cultivator and should be just sufficient to keep the weeds under control. Too frequent cultivation is likely to cause a rank growth and late maturity.

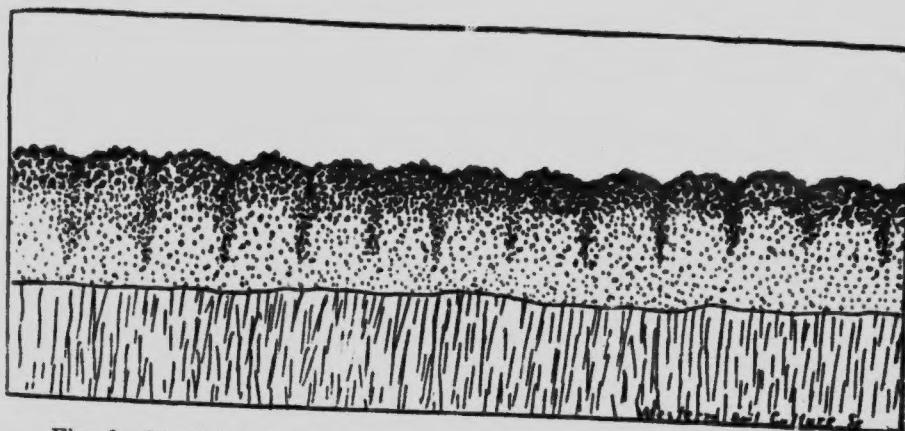


Fig. 6.—Plowed field after using the packer. All the loose places about the bottom of the furrow slices have been firmed, and the clods broken up fine.

Methods Recommended in All Districts for Quack Grass

Quack Grass or Couch Grass is a perennial, as are Canada Thistles and Perennial Sow Thistles; but Quack Grass has very tough rootstocks; therefore, methods recommended for the thistles mentioned are not effective when used on Quack infested land.

FALL CULTIVATION.—Skim plow shallow in the fall to encourage the germination of the seeds.

SUMMER CULTIVATION.—Plow about June 15th, four inches deep. Pack or roll the sods down immediately after plowing. About July 1st plow crosswise about five or six inches deep to cut up the sod and bring the roots to the surface. Leave the land rough until the sods are dried out, then tear to pieces with the disk harrow, drag harrow and narrow tooth cultivators. The roots, when well shaken from the soil, may be left on the surface to dry out by the sun or be raked into windrows and drawn off the field.

The Summer-Fallow Competition

Summer-fallow Competitions are now recognized as an integral part of Agricultural Society work, and should be conducted under the direction of the Societies. To encourage better methods of Summer-fallowing, the Department of Agriculture gives to Agricultural Societies engaging in this line of work a special grant of 60 per cent. of the amount of money actually paid out in cash prizes.

The Summer-fallow Competition naturally leads to the Standing Crops Competition, and this in turn to the Seed Grain Fair; consequently every Society should, at its annual meeting or at a subsequent meeting of the directors, appoint a committee of three to work out the details of one or more of these competitions.

This Committee should,—

1. Carefully study the needs of the district and ascertain the number of members who are willing to compete.
2. Plan for at least one meeting during the winter at which the Summer-fallow and Standing Crops Competition are the leading topics.
3. Recommend to the Directors the competitions that seem to them the most desirable.
4. Study the suggested score card published in this bulletin, and make such modifications in it as are likely to meet the needs of the district.

5. Submit these changes to the Superintendent of Agricultural Societies for acceptance.
6. Arrange to have revised score cards printed, if there is considerable variation from the card shown in this circular.
7. Appoint one local judge, and, if thought advisable, a second judge from an adjoining district to act along with the official judge or referee appointed by the Extension Service.
8. Plan for an automobile trip when the judging is being done to each of the fields entered for competition, both in the Summer-fallow and Standing Crops Competition.

GENERAL RULES

1. Membership in a Society will entitle anyone to compete.
2. Each competitor must enter at least ten acres.
3. Each competitor is required to fill in the form given on pages 14 and 15.
4. All entries should be in the hands of the Secretary-Treasurer before June 1st.
5. The Secretary-Treasurer should notify the Extension Service before June 15th of the number of entries, giving the Section, Township and Range of each contestant.

In placing the awards, the judges will use one of the following score cards (amended so as to suit local conditions, if necessary), as a guide:

SCORE CARD FOR SUMMER-FALLOW COMPETITIONS IN EASTERN DISTRICT

| Description. | Possible Score. | Contestant. | | | | | | | | Remarks. |
|--|-----------------|-------------|---|---|---|---|---|---|---|----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Fall Cultivation (Skim Plowing, etc.) | 15 | | | | | | | | | |
| Spring Cultivation (Harrowing, etc.) | 5 | | | | | | | | | |
| Time of Plowing | 25 | | | | | | | | | |
| Depth of Plowing | 10 | | | | | | | | | |
| Kind of Plowing (Good or Bad) | 20 | | | | | | | | | |
| Kind of Surface Cultivation | 20 | | | | | | | | | |
| Frequency of Surface Cultivation | 20 | | | | | | | | | |
| Freedom from Weeds and Live Roots | 50 | | | | | | | | | |
| Firmness | 10 | | | | | | | | | |
| Corrugated Surface | 5 | | | | | | | | | |
| Crowns and Dead Furrows | 10 | | | | | | | | | |
| Headlands and Field Corners | 10 | | | | | | | | | |
| TOTAL | 200 | | | | | | | | | |

SCORE CARD FOR SUMMER-FALLOW COMPETITIONS
IN
SOUTH-WESTERN DISTRICT

| Description. | Score. Possible | Contestant. | | | | | | | | Remarks. |
|---|--------------------|-------------|---|---|---|---|---|---|---|----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Fall Cultivation (Skim Plowing, etc.) | 20 | | | | | | | | | |
| Spring Cultivation (Harrowing) | 5 | | | | | | | | | |
| Time of Plowing | 20 | | | | | | | | | |
| Depth of Plowing | 20 | | | | | | | | | |
| Kind of Plowing (Good or Bad) | 20 | | | | | | | | | |
| Kind of Surface Cultivation | 5 | | | | | | | | | |
| Frequency of Surface Cultivation | 10 | | | | | | | | | |
| Freedom from Weeds and Live Roots | 30 | | | | | | | | | |
| Firmness | 20 | | | | | | | | | |
| Corrugated Surface or other means preventing soil drifting | 30 | | | | | | | | | |
| Crowns and Dead Furrows | 10 | | | | | | | | | |
| Headlands and Field Corners | 10 | | | | | | | | | |
| TOTAL | 200 | | | | | | | | | |

**SCORE CARD FOR SUMMER-FALLOW COMPETITIONS
IN
NORTH-WESTERN DISTRICT**

| Description. | Possible Score. | Contestant. | | | | | | | | Remarks. |
|---|-----------------|-------------|---|---|---|---|---|---|---|----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Fall Cultivation (Skim Plowing) | 15 | | | | | | | | | |
| Spring Cultivation (Harrowing) | 5 | | | | | | | | | |
| Time of Plowing | 20 | | | | | | | | | |
| Depth of Plowing | 15 | | | | | | | | | |
| Kind of Plowing (Good or Bad) | 20 | | | | | | | | | |
| Kind of Surface Cultivation | 5 | | | | | | | | | |
| Frequency of Surface Cultivation | 10 | | | | | | | | | |
| Freedom from Weeds and Live Roots | 35 | | | | | | | | | |
| Firmness | 30 | | | | | | | | | |
| Corrugated Surface or other means preventing soil drifting | 25 | | | | | | | | | |
| Crowns and Dead Furrows | 10 | | | | | | | | | |
| Headlands and Field Corners | 10 | | | | | | | | | |
| TOTAL | 200 | | | | | | | | | |

(Reverse Side of Score Card)

SCORE CARD FOR SUMMER-FALLOW COMPETITIONS

- | | |
|--------------|--------------|
| 1. Name..... | 5. Name..... |
| Address..... | Address..... |
| 2. Name..... | 6. Name..... |
| Address..... | Address..... |
| 3. Name..... | 7. Name..... |
| Address..... | Address..... |
| 4. Name..... | 8. Name..... |
| Address..... | Address..... |

Explanation of use of Score Cards

The allotment of credits on the score cards submitted on preceding pages are intended only as a guide, and not as being arbitrary.

The score cards are so arranged that the same things are taken note of in each district. The value of the items vary according to the difference in the weeds, soil and climate. The score on the following items: Fall Cultivation, Spring Cultivation, Time of Plowing, Kind of Surface Cultivation and Frequency of Surface Cultivation, will be determined from the data given in a statement made by the competitor. The score for all the other items will be determined by the judge from an examination of the field about the month of September.

FALL CULTIVATION.—The full score will be given if the skim plowing has been well done and the land harrowed in the fall. If it has been double disked, about 60% of the total score will be given; if single disked, 30%. If the harrowing is omitted after either the plowing or disking, deduct 10%.

SPRING CULTIVATION.—When the land has been drag-harrowed or disked in the spring, the total score is given.

TIME OF PLOWING.—The earlier the land is plowed in June, the better; therefore, if the land is plowed the first week in June give full score, second week in June 75% of the score, third week in June 50% of the score, fourth week in June 25% of the score. After July 1st cut the total amount of score.

DEPTH OF PLOWING.—In the *Eastern* District give full score for four to six inches, as considered right for the district, and cut 25% for each inch it deviates from that depth.

In the *South-western* District give full score for six inches or deeper and deduct 20% for each inch shallower than six inches.

In the *North-western* District give full score for four to six inches and deduct 25% for each inch it deviates from this depth.

The above schedule is given only as a guide, for under many conditions, such as shallow soil, the judge will have to use his own discretion.

KIND OF PLOWING.—If the plowing is well done, as determined by the judge at time of inspection from a cut and cover strike out, straight dead furrows, lands of equal width, the absence of "misses," etc., a full score should be given. For each evidence of poor plowing as noted above, deduct 25% of the score.

KIND OF SURFACE CULTIVATION.—In the *Eastern* District harrowing immediately after the plow and cross harrowing about one week later with the duck-foot cultivator used afterwards, so as to cut the weeds off about four inches below the surface, would be considered good enough for a perfect score. For each harrowing omitted deduct 10%, for the use of the disk instead of the cultivator deduct 50%.

In the *South-western* and *North-western* districts the harrow following immediately after the plow, followed by the packer and then harrowed or duck-foot cultivated as necessary would be considered perfect. If the first harrowing is omitted deduct 20%, if the packing is omitted deduct 50% and the full 100% if no other cultivation is given.



Fig. 7.—The drag harrow after the plow does first-class work on the top of the furrow, but does not pack the bottom of the furrow slice as it should.

FREQUENCY OF CULTIVATION.—In the *Eastern* District give a full score if the duck-foot cultivator is used eight times. Deduct 10% for each time the cultivating is omitted.

In the *South-western* and *North-western* Districts three duck-foot cultivations or five drag-harrowings would be considered perfect. Deduct 30% for each cultivation omitted and 20% for each harrowing.

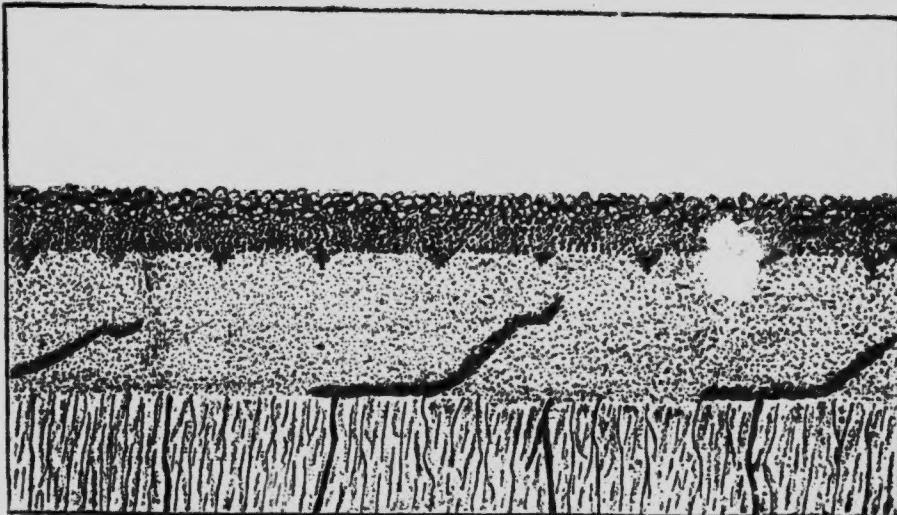


Fig. 8.—Same field as above after using the packer.

FREEDOM FROM WEEDS AND LIVE ROOTS.—In the *Eastern* District the land must be black at all times, i.e., no weeds appearing above the surface. The roots must also be dead. Where this is the case the full score should be given. The cut will have to be left to the discretion of the judge.

In the *South-western* and *North-western* Districts annual weeds above the ground, but small enough to be destroyed by the drag harrow or duck-foot cultivator may be tolerated and a full score given. If there are perennial weeds it must be left black as above.

FIRMNESS.—The firmness will be ascertained by walking over the fallow. If it is firm enough two to two and one-half inches below the surface to prevent the foot sinking into it, a full score should be given. If it is firm right to the surface and no mulch, or too loose, the score will be cut accordingly.

CORRUGATED SURFACE.—In the *Eastern* and *North-western* Districts the surface should be left corrugated as indicated by photo on the front cover. When in that condition a full score is given. A deviation from this will be cut for accordingly.

In the *South-western* District the surface should be left as outlined in photo on the front cover, or have a cover crop or top dressing to prevent drifting to receive a perfect score. If the soil is drifting, a corresponding cut should be made.

CROWNS AND DEAD FURROWS.—To obtain a full score the crowns and dead furrows should be obliterated; if they are in evidence they should be cut for accordingly.

HEADLANDS AND CORNERS OF FIELD.—There should be no weeds growing on the headlands or corners of the field. If these are cultivated and clean or in clean sod a full score will be given.

Statement of Work Done

By Mr..... on summer-fallow in the
Summer-fallow Competition of the Agricultural Society of.....

1. FALL CULTIVATION.

| | |
|---------------------------|-----------|
| Was the land skim plowed? | Date..... |
| How deep? | Date..... |
| Was it drag harrowed? | Date..... |
| Was it double disked? | Date..... |
| Was it single disked? | Date..... |

2. SPRING CULTIVATION.

| | |
|------------------------|-----------|
| Was the land harrowed? | Date..... |
| Was it disked? | Date..... |

3. TIME OF PLOWING.

| | |
|-------------------------------|--|
| When was the plowing started? | |
| When was it finished? | |

4. DEPTH OF PLOWING.

How deep was the land plowed?

5. SURFACE CULTIVATION.

Was the land harrowed immediately after the plow? Date.....

Was it harrowed the second time? Date.....

Was it packed? Date.....

What kind of packer was used?

What kind of cultivation was used?

Date of first cultivation..... Date of fifth cultivation

Date of second cultivation..... Date of sixth cultivation.....

Date of third cultivation..... Date of seventh cultivation

Date of fourth cultivation Date of eighth cultivation.....

I declare the above to be a true statement of the work performed on the portion of land in the Summer-fallow Competition.

Signed

Witness

Address

Suggestions Regarding the Best Methods of Using the Duck-foot Cultivator

In the first place this implement must not be expected to do the work of a plow and turn under a crop of weeds a foot or more in height; nor will it do good work if tall weeds have been plowed under previously. It is intended to destroy the young annual weeds while they are only a few inches high. Where thistles are prevalent, it is expected to cut off the stems of these plants below the surface of the ground and prevent them from forming leaves.

To enable this implement to do effective work, each tooth must be kept sharp, bright and in perfect repair. No tooth must be out of line or lower than its neighbor and the whole implement must be run perfectly level. Most makes have a leveling contrivance, but where this is not attached fairly good leveling may be done by raising and lowering the neckyoke.

Where the soil is loose and inclined to adhere to the teeth, it will be found advisable to set them to run on the bottom of the plowed furrow. The hard unbroken soil will then keep the teeth clean and bright. If all adhering soil is removed at the end of each furrow, the teeth will soon become smooth and bright. At noon the implement should be raised and all the teeth cleaned off and at the close of the day's work a little grease may be smeared over them; this will prevent rust. In the fall the implement should be kept under cover, the teeth removed, smeared with axle grease and hung in a dry place.

